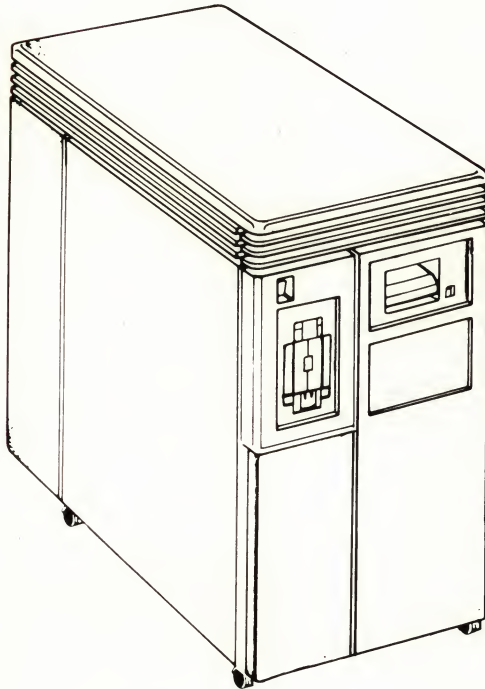


MicroVAX II 630QB

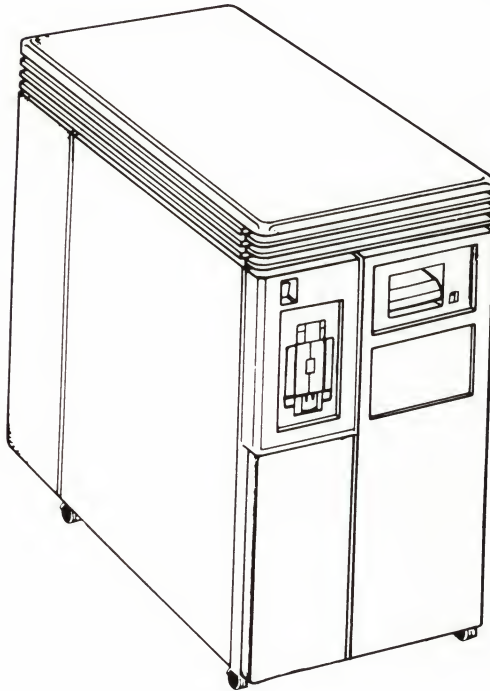
Owner's Manual



digital™

MicroVAX II 630QB

Owner's Manual



Prepared by SSG/ML Publications
of
Digital Equipment Corporation

First Printing, March 1985

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OVERVIEW

This manual describes how to install and operate the MicroVAX II system and what to do if you have a problem with the system. Coverage is provided for the 630QB (BA123-A) version. DIGITAL recommends that you carefully read the Installation and Operation sections of this manual before you attempt to install and operate the MicroVAX II system.

This manual is for a MicroVAX II system user; little or no previous computer experience is assumed. To help non-technical users, the glossary explains common computer terms.

Detailed technical information is available in the *MicroVAX II System Technical Manual* and in other related documents. Related documents and their order numbers are listed in Appendix A.

Before installing your system, make sure the site conforms to the environmental and safety requirements described in the site preparation instructions. The requirements are summarized in Appendix B.

To install the system, perform the following steps in order. If you have trouble:

- Refer to the Troubleshooting section of this manual.



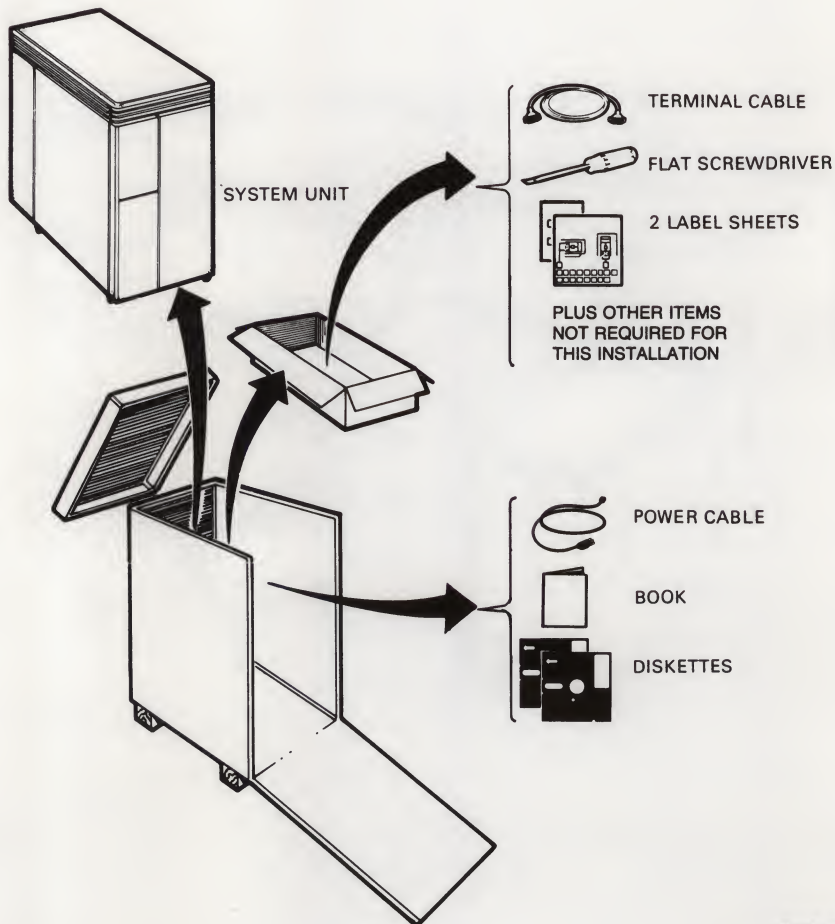
MLO-182-85

PROCEDURE

Step 1: Unpack the MicroVAX II system.

If any item is missing or damaged:

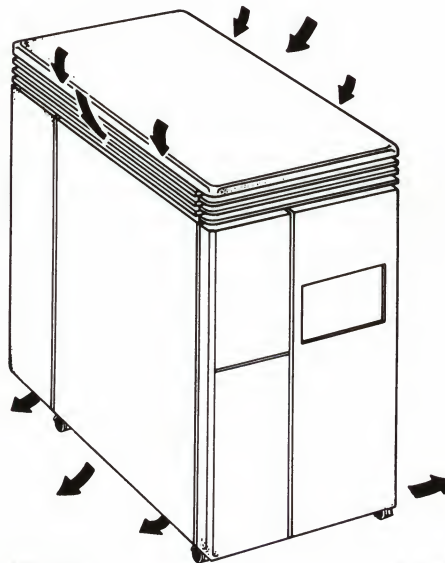
- Contact your sales representative or store.
- Contact your delivery agent.



MLO-183-85

Step 2: Put the system unit where it will be used.

- Allow space around the unit for air circulation and servicing.
- Keep food and liquid away from unit.
- Place the unit away from heaters, photocopiers, and direct sunlight.
- Minimize static by placing the unit away from busy office corridors.
- Keep the area free from dust and other abrasive materials.
- Install your system in an operating environment that meets the requirements listed in Appendix B.

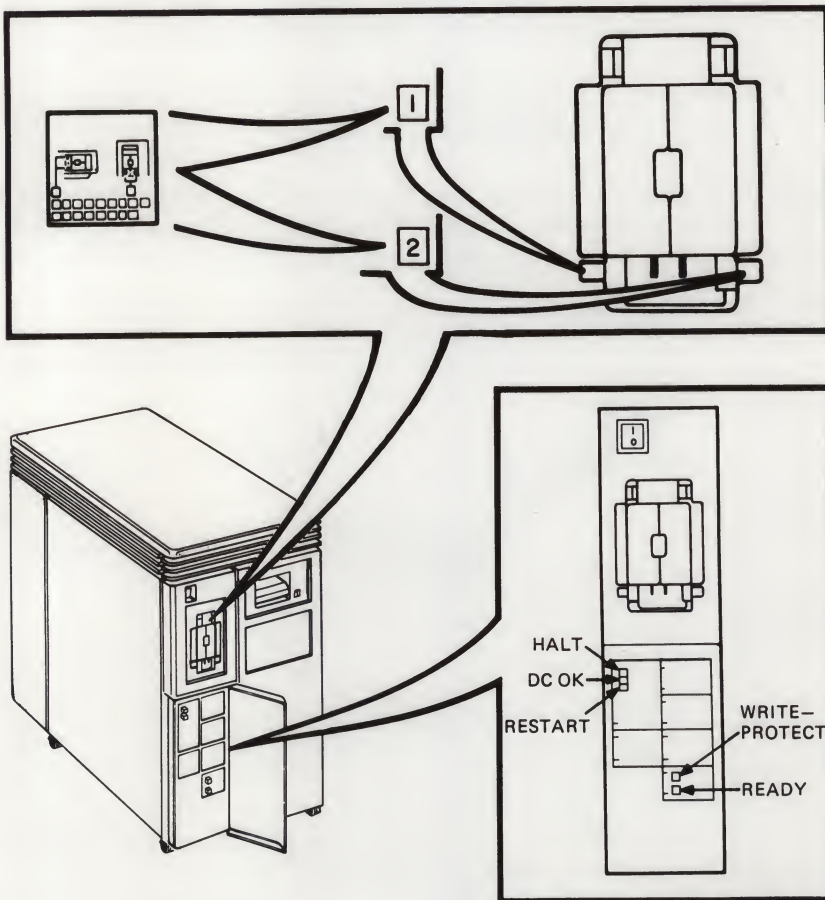


MLO-184-85

Installation — Procedure

Step 3: Label the control panel and diskette drive units.

- Make sure that all buttons on the control panel are out.
- If your unit contains diskette drives, label them 1 and 2.
- Select labels for your language.



MLO-185-85

Step 4: Unpack the installation and user guides for the first terminal to be connected to your system.

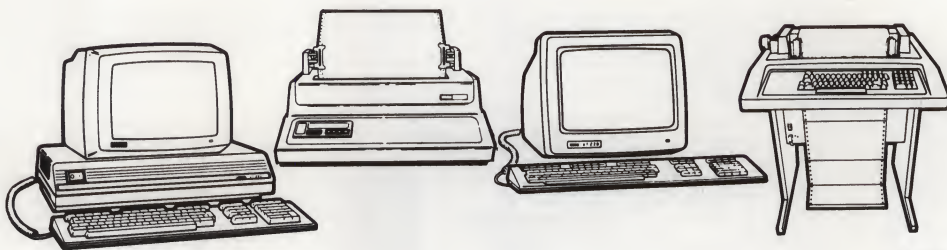
- This will be the "console" terminal.



MLO-188-85

Installation — Procedure

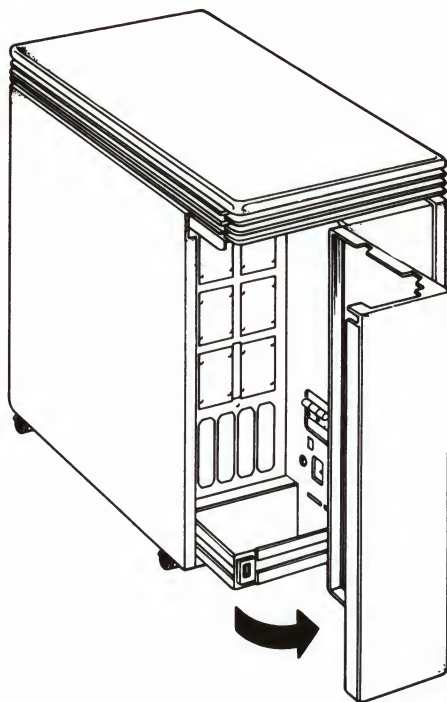
Step 5: Use the installation guide to unpack and install the console terminal.



MLO-187-85

Step 6: Open the rear door of your unit.

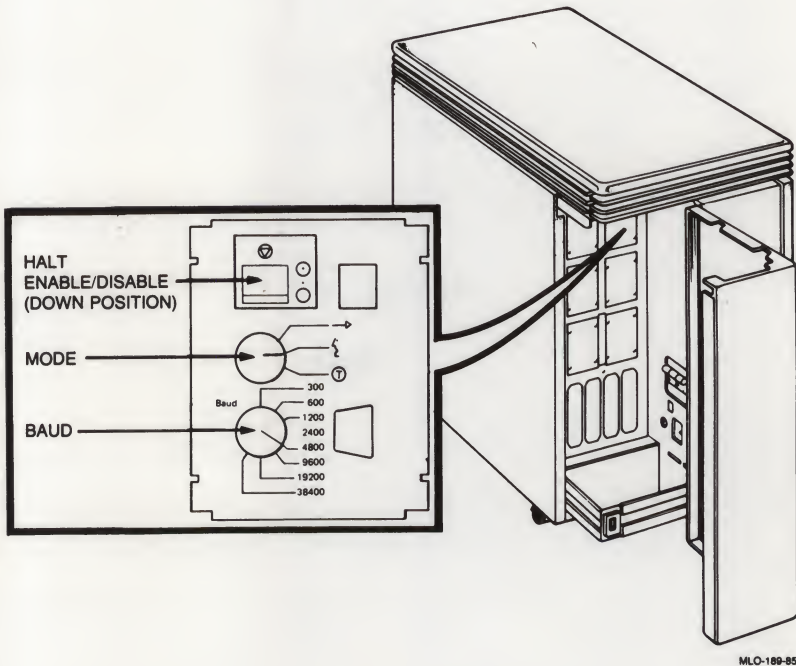
- The door is held in place by a pop fastener.



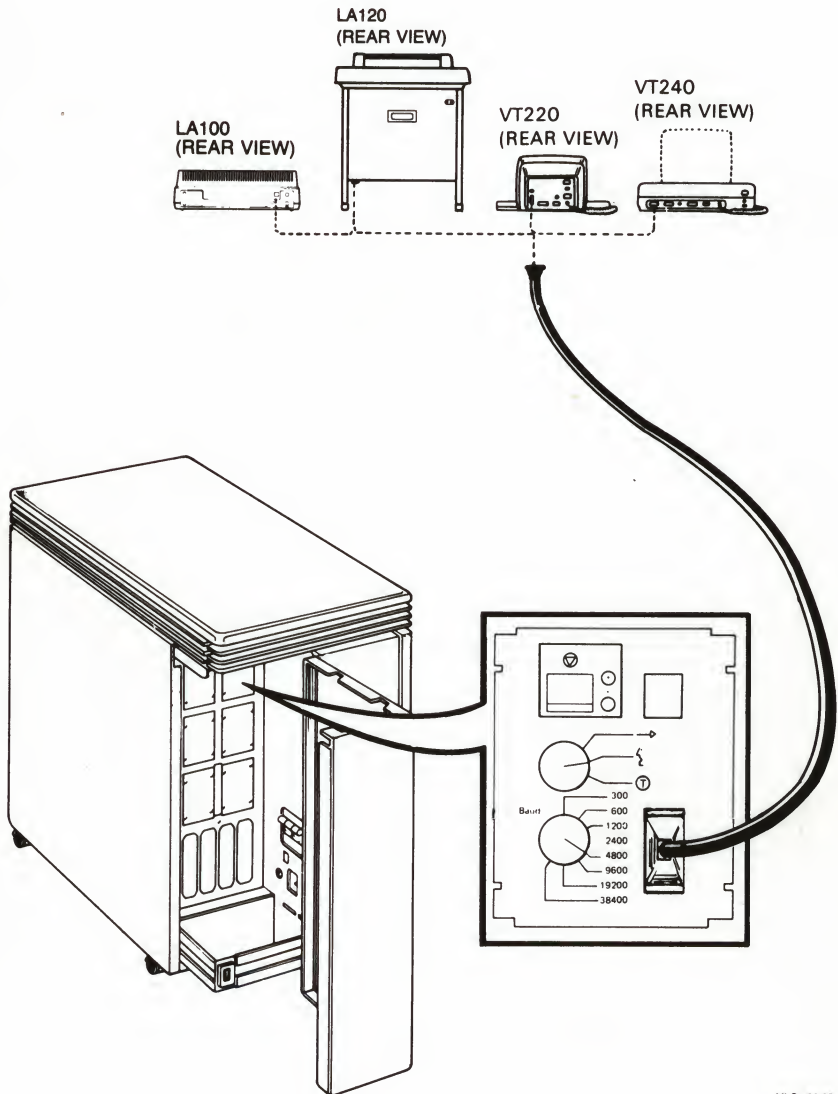
MLO-188-95

Step 7: Set the controls on the CPU distribution panel on the rear of the unit to the positions listed below.

- Set the Baud control knob for the console terminal to 4800.
- Set the Mode switch to the middle (language inquiry) position.
- Set the Halt Enable/Disable switch to the disable (down) position.



Step 8: Connect the console terminal cable to the console terminal and the unit as shown.

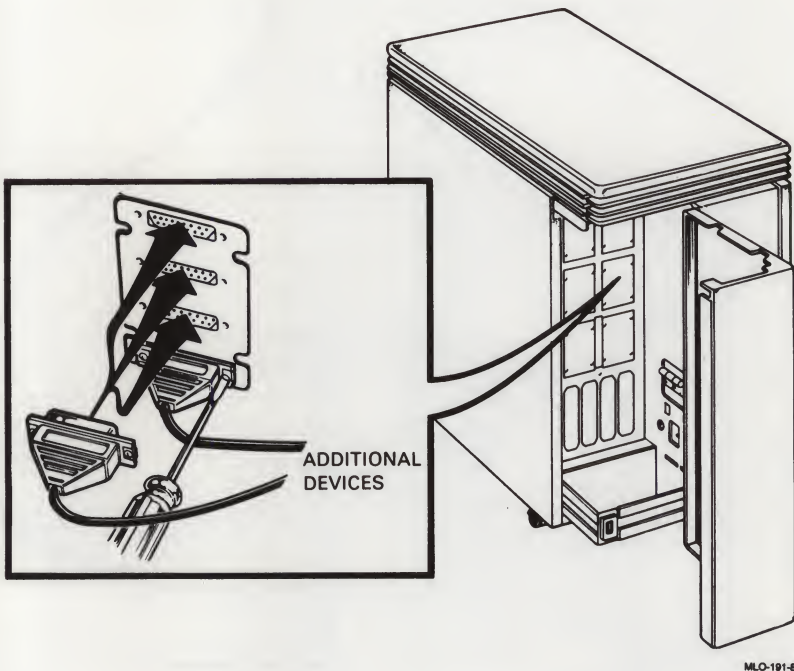


MLO-190-85

Installation — Procedure

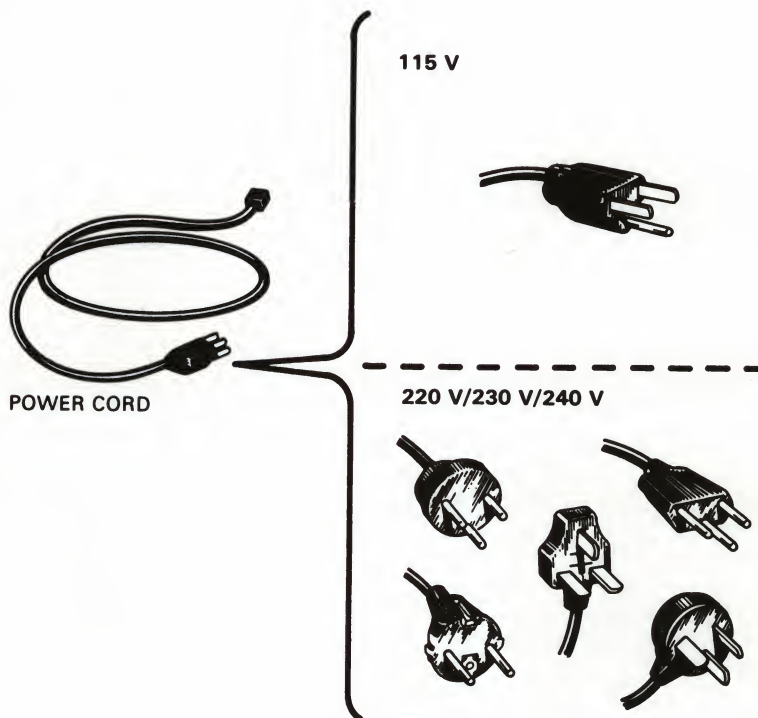
Step 9: Install and connect any additional devices.

- Additional devices may include terminals, printers, modems, and external storage devices. The devices may be connected in any order.
- Refer to the installation guide included with each device.



Step 10: Identify the power cable.

- Make sure the power cable plug matches the wall outlet.



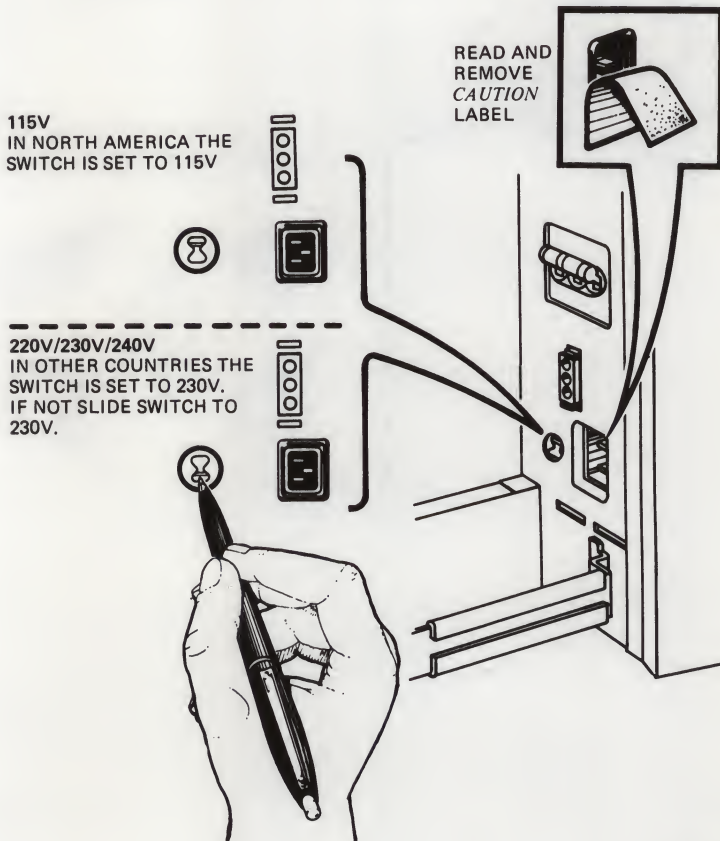
MLO-192-85

Installation — Procedure

Step 11: Check the voltage switch setting. Peel back the label covering the switch to see the voltage setting. If necessary, change the switch setting to match the voltage source you are using.

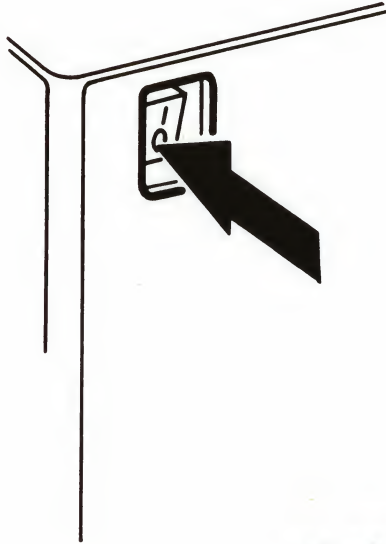
CAUTION

An incorrect voltage switch setting will damage your system.



MLO-193-85

Step 12: Set the power switch on the front of the unit to 0 (off).

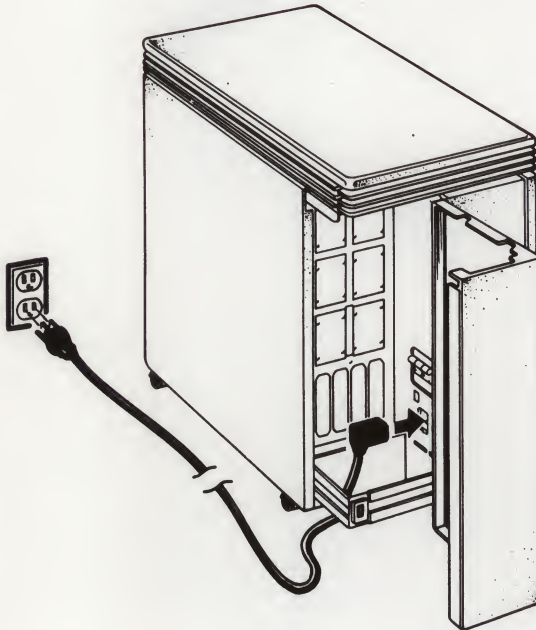


MLO-194-85

Step 13: Plug in the power cable.

- Thread all the cables through the lower cable guide.
- Do not close the rear door at this time.

Now you are ready to test your system.



MLO-195-85

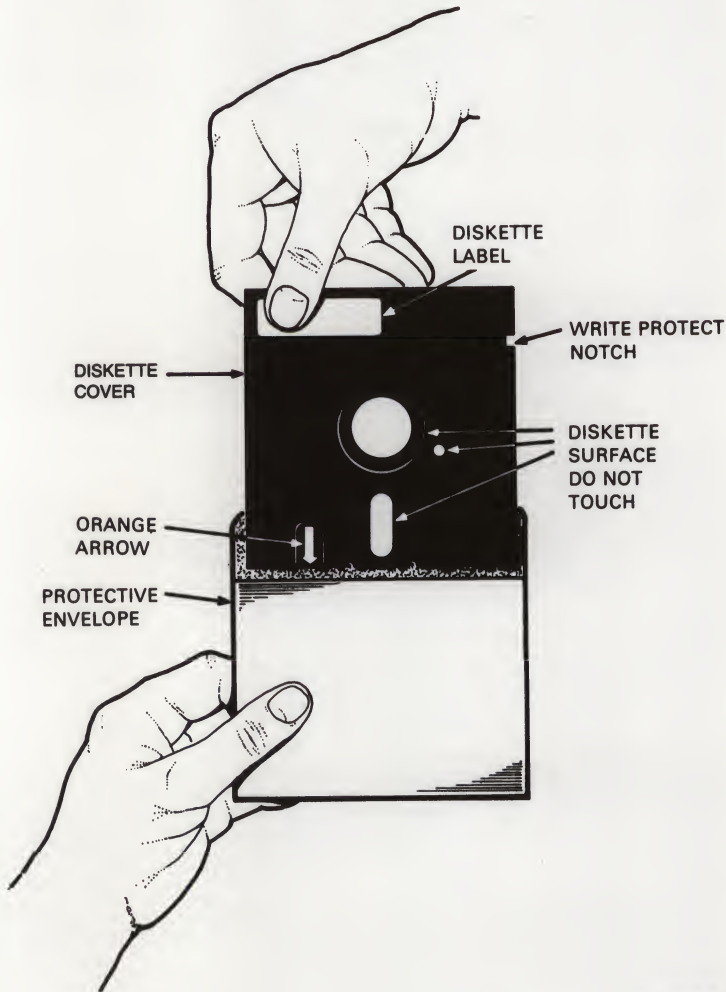
TESTING

Testing your system consists of turning the system on, selecting a language, and executing MicroVAX Maintenance System software.

Your system has at least one RD52 or RD53 fixed disk drive. Your system also contains an RX50 diskette drive and/or a TK50 tape drive. If your system does not contain a tape drive proceed with step 14. If your system has a tape drive, turn to step 16 (skip steps 14 and 15).

Testing with the RX50 Diskette

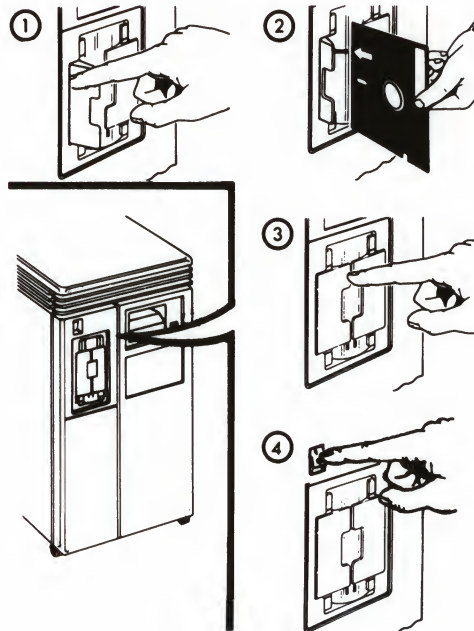
Step 14: Find the diskette labeled **MicroVAX Maintenance System** in the diskette holder at the front of this manual.



MLO-190-05

Step 15: Insert the diskette in drive 1.

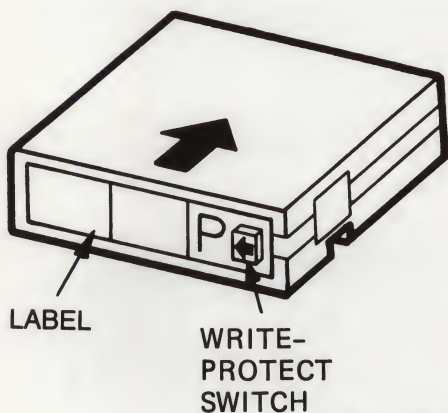
1. Open drive 1.
2. While aligning the orange arrow on the diskette with the orange stripe on the drive, insert the diskette.
3. Close the diskette drive door.
4. Set the power switch to 1 (on) and proceed immediately to step 19 (skip steps 16, 17, and 18).



MLO-187-85

Testing with the TK50 Tape Drive

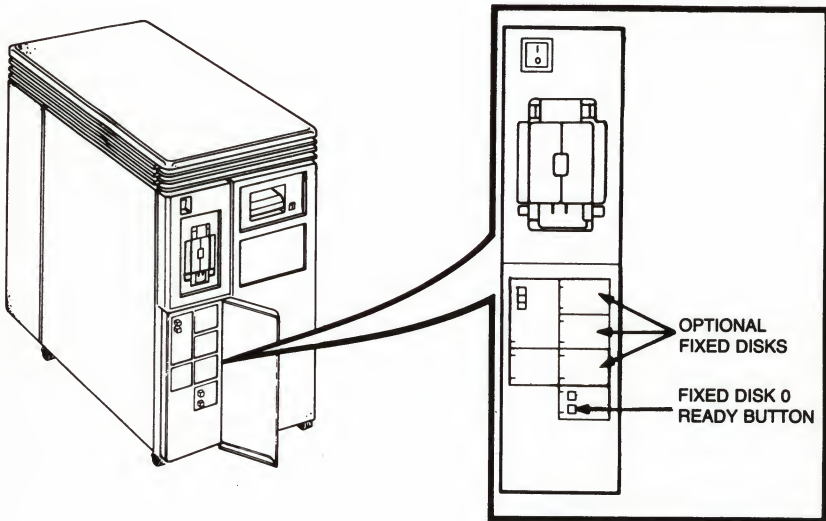
Step 16: Find the tape cartridge labeled **MicroVAX Maintenance System** in the cartridge holder at the front of this manual.



MLO-198-85

Step 17: Push the Fixed Disk 0 Ready buttons on the control panel for all fixed disks present.

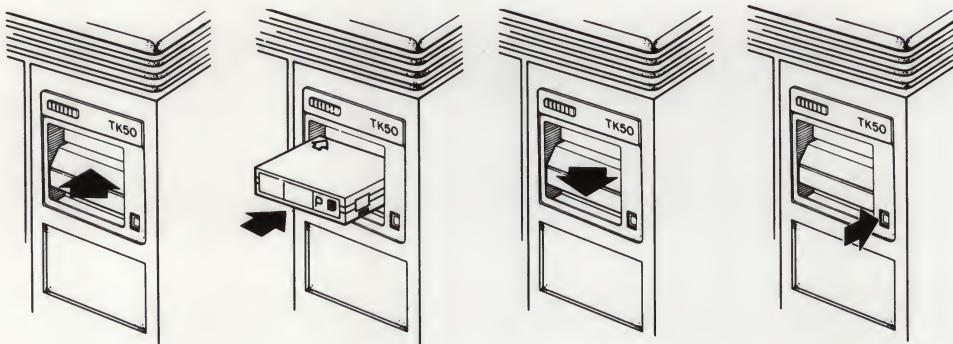
- This places the fixed disks off-line.



MLO-199-85

Step 18: Insert the tape cartridge into the tape drive.

1. Set the power switch to 1 (on).
2. The Load/Unload button glows green for two seconds and then goes out.
3. Open the tape drive door by lifting the cartridge release handle up.
4. With the arrow on the tape cartridge facing up, insert the tape cartridge into the tape drive.
5. Firmly push the release handle down.
6. Push the Load/Unload button. The Load/Unload button slowly flashes for 10-15 seconds as the tape loads.



MLO-200-85

Step 19: A few moments after setting the power switch to 1 (on), you should see the language selection menu on the console terminal.

- If you do not see this display, go to the Troubleshooting section of this manual.

KA630-A.1

1) Dansk	7) Nederlands
2) Deutsch	8) Norsk
3) English	9) Português
4) Español	10) Suomi
5) Français	11) Svenska
6) Italiano	

(1..11):

MLO-201-85

Select the language you wish to use by pressing the corresponding number key and then pressing the RETURN key on the console terminal keyboard.

A few moments after selecting the language, you should see this power-on display on the console terminal.

- The terminal slowly displays the numbers 7 through 3 indicating completion of steps in the power-on test.
- The last part of the display contains the numbers 2 through 0 indicating that the system is loading MicroVAX Maintenance System software.

```
Performing normal system tests.
```

```
7..6..5..4..3..
```

```
Tests completed.
```

```
Loading system software.
```

```
2..1..0
```

MLO-202-85

A few moments later you should see the introductory display of the MicroVAX Maintenance System.

MicroVAX Maintenance System - Version 1.9

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Current date and time is: 15-Feb-1985 13:30:10

Press the RETURN key to continue
OR enter new date and time, then press the RETURN key.

[DD-MMM-YYYY HH:MM]: >

MLO-203-85

Step 20: Make sure the current date and time in the introductory display are accurate. If the current date and time are accurate, press the RETURN key to continue.

- If the current date and time are inaccurate or "not known", type the correct date and time following the format shown. An example is: 15-Feb-1985 13:30. Press the RETURN key to continue.

A few moments later you should see the Maintenance System MAIN MENU display.

MAIN MENU

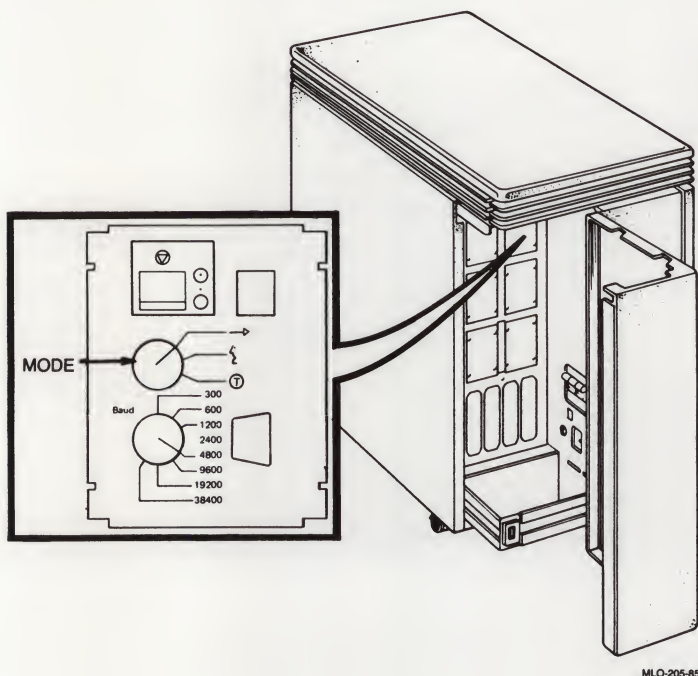
- 1 - Test the system
- 2 - Show system configuration and devices
- 3 - Display the Utilities Menu
- 4 - Display the Service Menu
- 5 - Exit MicroVax Maintenance System

Type the number, then Press the RETURN key.

MLO-204-85

Step 21: Save the language you selected.

- Rotate the Mode switch to the counterclockwise (—————>) position.
- Close the rear door.



Step 22: Select the system test by typing 1 and then pressing the RETURN key.

A few moments later, you should see this SYSTEM TEST screen.

SYSTEM TEST

This is a test of the MicroVAX computer and its devices.
No Preparation for this testing is required; the MicroVAX
is ready to be tested.

Testing occurs in two parts: the functional tests quickly
test each device sequentially; the exerciser test (lasting
about 4 minutes) tests how the devices work together.

To halt the test at any time and return to the Main Menu,
type ^C by holding down the CTRL Key and Pressing the C Key.

Press the RETURN key to begin testing,
OR type 0 and Press the RETURN key to return to the Previous menu.

MLO-208-85

Step 23: Press the RETURN key to begin testing.

- Several messages should be displayed on the console terminal to inform you of the progress of the system tests.
- After about 4 minutes, the following message should appear on your screen.

SYSTEM TEST PASSED

All devices passed functional tests and the system passed the exerciser test.

At this point you may exit from the maintenance system or perform more specialized testing. If you would like additional information, consult the Maintenance Section of your System Technical Manual.

Press the RETURN key to return to the Previous menu.

MLO-207-85

You have successfully installed and tested your MicroVAX II system.

NOTE

*If you see any error messages,
refer to the MicroVAX II
System Technical Manual.*

Step 24: Return to the MAIN MENU by pressing the RETURN key.

- The MAIN MENU shown in Step 20 will be displayed.

Step 25: Exit the MAIN MENU by typing 5 and pressing the RETURN key.

- The following message should be displayed on the console terminal.

EXIT MicroVAX MAINTENANCE SYSTEM

Remove any test media from disk or tape drives.

If you changed the system in any way for testing,
return it to its normal operating condition.

You may record the diagnostic error log created during this
session on your MicroVAX Diagnostic History File diskette
before exiting.

1 - Record the current diagnostic error log in the
Diagnostic History File

2 - Exit MicroVAX Maintenance System

Type the number, then press the RETURN key,
OR type 0 and Press the RETURN key to return to the Previous menu.

MLO-208-85

Step 26: Remove the MicroVAX Maintenance System diskette or tape cartridge from the drive and return it to its holder.

Step 27: Exit the Maintenance System by typing 2 and pressing the RETURN key.

- The following message should be displayed on the console terminal.

Exiting MicroVAX Maintenance System.

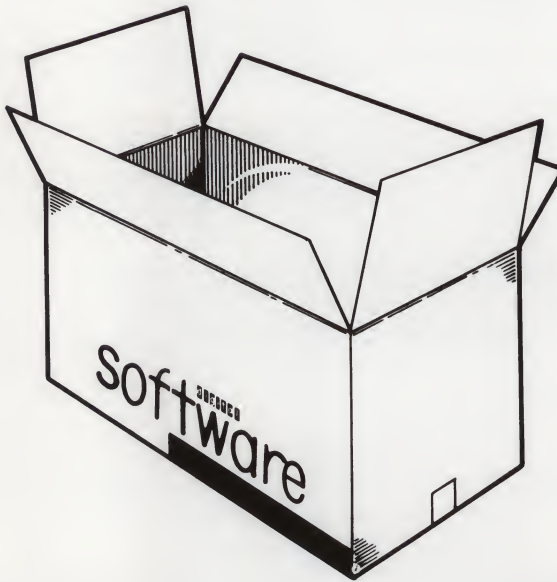
Exit complete. You may now load your system software.

MLO-208-85

INSTALLING SYSTEM SOFTWARE

Step 28: The MicroVAX II is now ready for you to install system software. System software can consist of either the MicroVMS or the ULTRIX operating system, or VAXELN application software.

- Follow the software installation instructions provided with your software.
- Read the Operation section of this manual.



MLO-210-85

This section describes:

- The control panel controls and indicators.
- How to turn on the system.
- How to turn off the system.
- The use of RD52 or RD53 fixed disks, RX50 diskettes, and TK50 tapes.

Control Panel

The control panel contains an On/Off switch, several system buttons, and several indicator lights (LEDs).

Additional controls and indicators are located on the CPU distribution panel on the rear of the unit. Those controls and indicators are not used for normal system operation. They are described in the *MicroVAX II System Technical Manual*.

Controls and Indicators

Control	Position	Function
1/0 (On/Off)	1 (glows red)	Turns the system on.
	0 (not lit)	Turns the system off.
Halt*	Out (not lit)	Normal position for software operation.
	In (glows red)	Stops normal software operation and puts the CPU in the console mode (see the <i>MicroVAX II System Technical Manual</i>).

(continued on next page)

* The Halt-Enable/Disable switch (on the rear of the unit) is normally set to the down (disable) position to disable the Halt switch.

Controls and Indicators (Cont.)

Control	Position	Function
Restart		Restarts the system as when turning on the power On/Off switch. Work in progress is lost.
Fixed Disk:*		
Write Protect	Out (not lit)	Normal position for software operation. System software is free to read or write information on the fixed disk.
	In (glows orange)	Prevents system software from writing on the fixed disk. You can write-protect the disk so that information is not erased accidentally from the disk if a wrong diagnostic program is chosen.

(continued on next page)

* The system contains one or more fixed disks, each with its own controls.

Controls and Indicators (Cont.)

Control	Position	Function
Ready	Out (glows green)	Fixed disk is ready to be used for information storage by the system software.
	In (not lit)	Turns off the fixed disk.

Indicator	Function
Run	Glows green when the CPU is operating.
DC OK	Glows green when the power supply is generating the correct voltages.

Turning the System On

This section describes the normal procedure for turning on the MicroVAX II system. The procedure assumes a system has been installed as described in the Installation section of this manual, and system software has been installed. If system software has not been installed, install the software as directed in the documentation supplied with the software before using the following procedure.

Initial Control Panel Switch Settings

1. Set the Fixed Disk 0 Ready button to the out (ready) position.
2. Turn on the console terminal.

Set the power 1/0 (on/off) switch to the 1 (on) position.

When you turn the power on, the control panel indicators should appear as listed on the next page. The console terminal should display a screen similar to the one shown on page 2-8.

Normal Power-On Indications

Control/ Indicator	Normal indication
1/0	Glows red
Run	Glows green
DC OK	Glows green
Fixed Disk:	
Ready	Glows green within 30 seconds.
Tape Drive:	
Load/Unload	Glows green for two seconds and then goes out.

If you do not observe the indications listed above, refer to the Troubleshooting section in this manual.

Performing normal system tests.

7..6..5..4..3..

Tests completed.

Loading system software.

2..1..0

MLO-211-85

The terminal should slowly display the numbers 7 through 3 indicating completion of steps in the power-on system tests. The MicroVAX II performs power-on system tests each time you turn the system on.

The last part of the power-on display shows the numbers 2 through 0 to indicate that the system is loading the system software. The first screen for the system software appears on the console terminal screen after a few seconds, as described in the documentation supplied with the system software.

If you do not see this sequence of events, refer to the Troubleshooting section in this manual.

You are now ready to use the system. Refer to the system software documentation for further instructions on using the system.

Operation — Turning the System Off

Turning the System Off

1. Follow the system shut-down procedure described in your system software documentation. That procedure will insure an orderly system shut-down that will prevent accidental loss of data.
2. Turn the system off by setting the power I/O switch to the 0 (off) position.

Making Backup Copies

A backup copy is a copy of files stored on the fixed disk, diskette, or tape. You should make backup copies of files to insure against accidental loss of information. As a general rule:

- Make backup copies on diskettes or magnetic tape.
- Make a daily backup copy of all information you create or change that day.
- Make a weekly backup copy of all information stored on your fixed disk.
- Store all backup copies in a safe place.
- Keep an extra copy of each diskette or magnetic tape.

Make backup copies of files you use with the system software as directed in the documentation supplied with the system software. A procedure for making a backup copy of the MicroVAX Maintenance System software is contained in the *MicroVAX II System Technical Manual*.

RD52 or RD53 Fixed-Disk Drives

The RD52 and/or RD53 fixed-disk drives are located inside the cabinet. Information is stored on nonremovable disks.

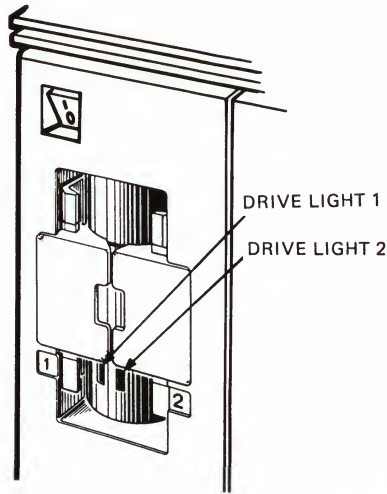
The RD52 fixed disk stores up to 31 M bytes of data. The RD53 fixed disk stores up to 71 M bytes of data.

The first fixed disk is referred to as drive 0.

RX50 Diskette Drive

The RX50 dual disk drive holds two 5.25-inch diskettes. Each diskette stores 400 kilobytes (K bytes) of information, which is roughly 150 typewritten pages.

An indicator light on each drive lights when the drive is in use.



MLO-212-85

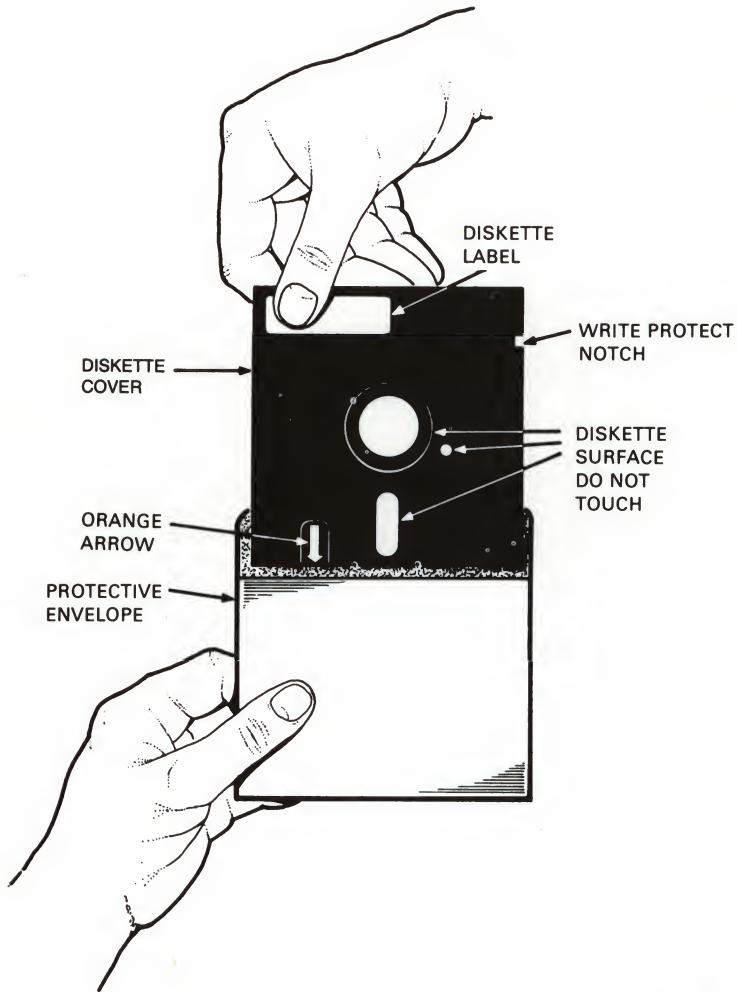
RX50 Diskettes

- Information is stored magnetically.
- Information is stored on only one side of an RX50 diskette.
- Information stored previously can be erased and new information stored in its place.

The diskette rotates inside its cover. The diskette is cleaned continuously by the soft fabric lining of the cover.

NOTE

Use only formatted RX50 diskettes, available from DIGITAL or its licensed distributors.



MLO-190-85

Diskette Handling and Storage Guidelines

- Do not touch the exposed surfaces of the diskette.
- Always return a diskette to its protective envelope to keep out dust and dirt.
- Do not bend or fold a diskette.
- Always store diskettes vertically and loosely to prevent the covers from becoming warped.
- Write the label before applying it to the diskette. Writing the label on the diskette might crease the cover.
- Keep diskettes away from direct sunlight, heaters, and other sources of heat.
- Keep diskettes away from magnets and equipment that generate magnetic fields, such as motors, transformers, and terminals.

- Always close the drive door when using a diskette. The drive does not work with the door open.
- Do not open the drive doors when the drive indicator lights are on. Information could be lost.
- Make and keep backup copies of all working diskettes. Refer to your system software documentation for instructions.

Write-Protecting a Diskette

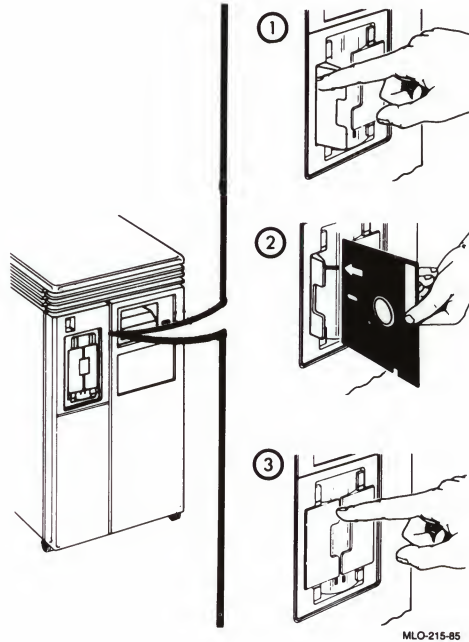
To prevent the system from accidentally adding, changing, or deleting information on a diskette, cover the write-protect notch with one of the self-adhesive foil tabs supplied with your diskettes. This procedure is known as write-protecting the diskette. You can later add or change information on the diskette by removing the write-protect tab. The tab is illustrated below.



MLO-214-85

Inserting a Diskette

1. Open the diskette door by pressing on its outer edge.
2. Align the orange arrow on the diskette with the orange stripe on the drive and insert the diskette. The write-protect notch is down in drive 1 and up in drive 2.
3. After inserting the diskette, press the drive door to close it.



TK50 Tape Drive

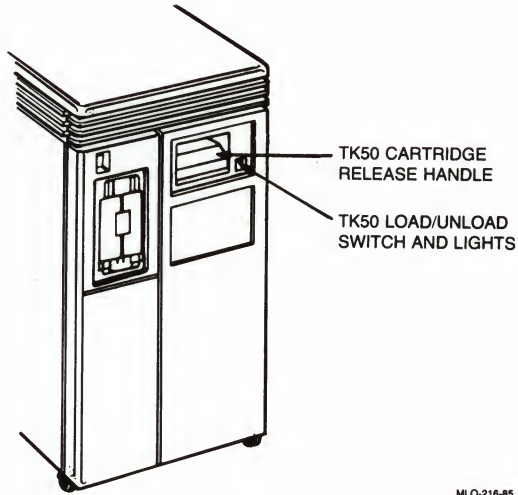
The TK50 tape drive holds one removable TK50 magnetic tape cartridge. Each tape cartridge holds 94.5 megabytes of information.

The tape drive is referred to as drive 1.

TK50 Tape

- Information is stored magnetically.
- Information is stored on only one side of the tape. The tape cartridge must be inserted correctly in the TK50 tape drive.
- Information stored previously can be erased and new information stored in its place.

Pages 2-22 through 2-23 summarize the operation of the TK50 tape drive Load/Unload button and indicator light and the tape cartridge release handle.



MLO-216-85

TK50 Tape Drive Controls and Indicators

Control	Position	Function
Load/ Unload	In	Loads the tape (10-15 seconds). If a tape is already in place when the power is turned on, rewinding and loading may take up to two minutes.
	Out	Rewinds and unloads the tape.

Light	Condition	Function
Load/ Unload	Slowly blinks	Indicates that a tape is loading or rewinding.
	Lit	Indicates tape operation or tape unloading. Also lit for two seconds during power-on self test.
	Not lit	After rewinding or unloading and tape is ready to be removed.
	Slowly flashing	Indicates that tape is rewinding.

(continued on next page)

TK50 Tape Drive Controls and Indicators (Cont.)

Light	Condition	Function
	Rapidly flashing	Refers to the Troubleshooting section of this manual.
Handle	Position	Function
Cartridge release handle	Up	To insert a tape or to remove a tape after rewind and unload operations are completed.
	Down	Locks tape in operating position.

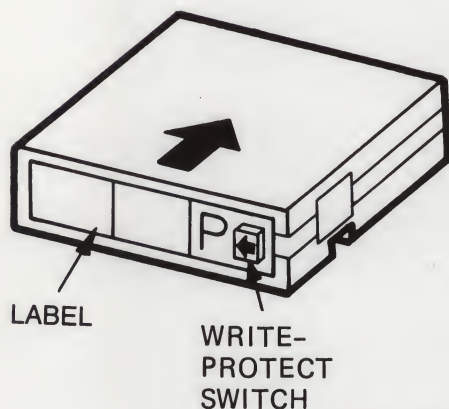
Labeling a Tape Cartridge

- Write the desired identification on the label.
- Insert the label in the slot on the front of the cartridge.
- Do not apply stick-on labels to the top, bottom, or sides of the cartridge.
- Do not write on the tape cartridge with a pen or pencil.

Write-Protecting a Tape Cartridge

Write-protecting a tape cartridge prevents accidental erasure of information stored on the tape.

- Slide the write-protect switch down.



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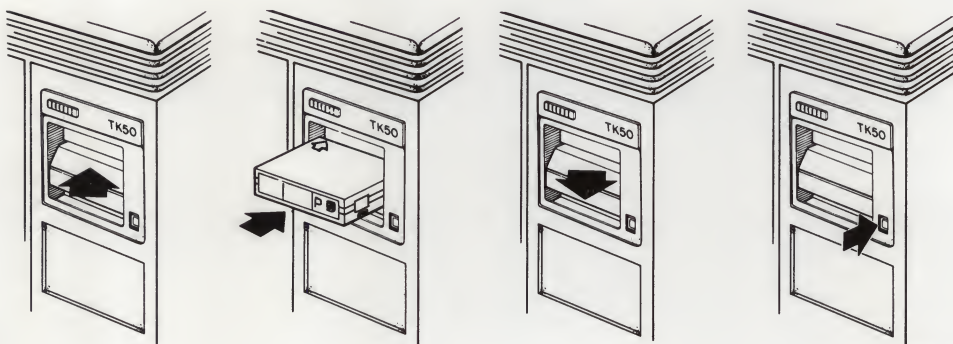
Tape Cartridge Handling and Storage Guidelines

- Do not touch the exposed surface of the tape.
- Write on the label before putting the label on the tape cartridge.
- Store tape cartridges in a dust-free environment.
- Keep tape cartridges away from direct sunlight, heaters, and other sources of heat. Store tape cartridges in an even temperature between 10 and 52 degrees C.
- Keep tape cartridges away from magnets and equipment that generate magnetic fields, such as motors, transformers, and terminals.
- Keep tapes away from x-ray equipment.

Inserting a Tape Cartridge

Make sure the Load/Unload button is out and the power switch is set to 1 (on).

1. Open the drive door by lifting the cartridge release handle up.
2. With the arrow on the cartridge facing down and pointing toward the drive, insert the cartridge in the TK50 drive.
3. Firmly push the release handle down.
4. Push the Load/Unload button. The Load/Unload button slowly flashes for 10-15 seconds as the tape loads.



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The tape drive is now ready to use.

The Load/Unload button normally remains lit when the TK50 drive is in use.

Note

If you turn the power to 0 (off) with a tape in the drive, tape loading may take up to 2 minutes the next time you turn the power to 1 (on).

Rewinding and Unloading a Tape Cartridge

- Press and release the Load/Unload button to rewind the tape. The Load/Unload button slowly flashes while rewinding the tape.

When rewinding is completed, the unloading procedure automatically takes over.

Note

The Load/Unload button will remain lit during unloading and will not be lit when unloading is completed.

Removing a Tape Cartridge

Complete the procedure for rewinding and unloading a tape cartridge. Do not proceed until the Load/Unload button is not lit.

1. Lift the cartridge release handle up.
2. Remove the tape cartridge and store it in a safe place.

Do not move the cartridge release handle when the Load/Unload button is lit.

TROUBLESHOOTING

Troubleshooting is the process of isolating and repairing minor problems.

This section contains three parts:

- Basic troubleshooting - A simple checklist of potential problems and what to do.
- Power-on messages - A list of indications that appear when the system is turned on and what they mean.
- The MicroVAX Maintenance System - This portion is divided into two parts. The first describes the maintenance tests and maintenance utilities and tells when to use them. The second discusses the main menu and describes maintenance system options.

BASIC TROUBLESHOOTING

The corrective actions listed on pages 3-2 through 3-8 are for minor problems. More serious problems require the use of the maintenance procedures described in the *MicroVAX II System Technical Manual*. Those procedures should only be performed by qualified service personnel.

Basic Troubleshooting Procedures

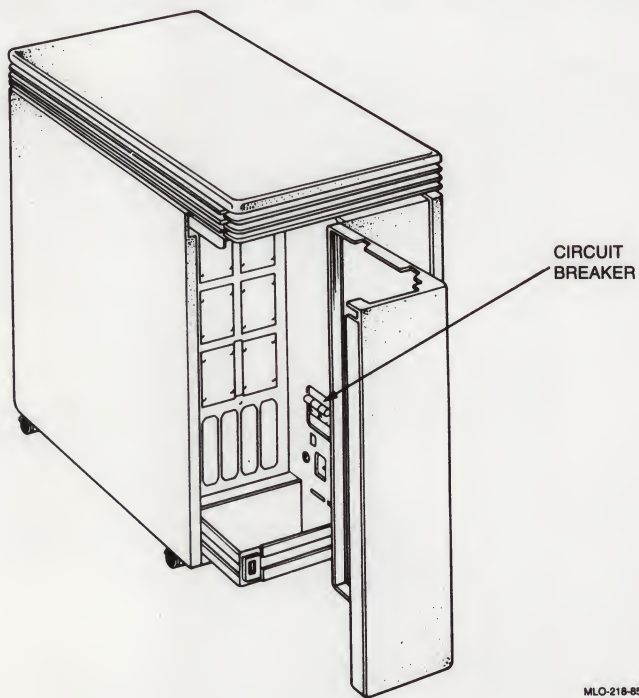
Problem	Possible Cause	Corrective Action
No response when the power switch is turned on (switch is not lit).	The system is not plugged in.	Set the power switch to off. Plug in the system. Set the power switch to on.
	There is no power at the wall outlet.	Use a different wall outlet.
	The system circuit breaker is tripped.	Set the power switch to off. Reset the circuit breaker by pushing it down and then lifting it up. The circuit breaker is shown on page 3-4. Set the power switch to on. If the circuit breaker trips again, refer the problem to service personnel.

(continued on next page)

Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
	The power cable is incorrectly installed.	Set the power switch to off. Check that the cable is fully seated into the socket in the rear of the system. Set the power switch to on.
Power is on (1/0 switch is lit), but there is no display on the console terminal.	The console terminal is off.	Turn the terminal on.
	The console terminal is off-line.	Put the terminal on-line. Refer to the documentation that came with the terminal.
	The console terminal cable is not installed correctly.	Make sure that the cable is installed properly at both ends.

(continued on next page)



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Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
	The baud rate setting of the system and the terminal do not match.	Make sure the baud rate settings are the same. Refer to the Installation section of this book.
	The mode switch on the CPU panel is set to T.	Refer to step 7 and step 21 in the Installation chapter for the correct switch setting.
Instead of automatically booting, system power on results in >>> being displayed on the console terminal.	The Halt Enable/Disable switch is set to the Enable position.	The system is in console mode. To exit console Mode, set the Halt Enable/Disable switch to the Disable (down) position and then restart the system.

(continued on next page)

Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
System does not boot from the fixed-disk drive.	The Ready button is in.	Press and release the Ready button.
	There is no system software on the disk.	Load (install) the system software on the fixed-disk using the system software installation instructions supplied with the software.
System does not boot from the diskette drive.	There is no diskette in the diskette drive 1.	Insert a diskette containing bootable system software in diskette drive 1.
	The diskette drive door is not closed.	Close the diskette drive door.

(continued on next page)

Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
	The diskette is in the drive upside down.	Check that the orange stripe on the diskette matches the stripe on the drive.
	The diskette is not bootable.	Use a diskette containing bootable system software.
	The diskette is worn or damaged.	Try another diskette.
Fixed disk read error message is displayed.	The Ready button is in.	Press and release the Ready button.
Fixed disk write error message is displayed.	The Ready button is in.	Press and release the Ready button.
	The disk is write-protected.	Press and release Write-Protect button.

(continued on next page)

Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
Diskette read error message is displayed.	There is no diskette in the diskette drive.	Insert a diskette in the drive.
	The diskette drive door is not closed.	Close the diskette drive door.
	The diskette is in the drive upside down.	Check that the orange stripe on the diskette matches the stripe on the drive.
	The diskette is not formatted.	Use a preformatted RX50 diskette.
	The diskette is worn or damaged.	Try another diskette.
Diskette write error message is displayed.	There is no diskette in the diskette drive.	Insert a diskette in the drive.

(continued on next page)

Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
	The diskette drive door is not closed.	Close the diskette drive door.
	The diskette is in the drive upside down.	Check that the orange stripe on the diskette matches the stripe on the drive.
	The diskette is not formatted.	Use a preformatted RX50 diskette.
	The diskette is worn or damaged.	Try another diskette.
System does not boot from the TK50 tape drive.	The fixed drive is on-line (Ready button is lit).	Push the Ready button.
	The Load/Unload button is out.	Push the Load/Unload button.

(continued on next page)

Basic Troubleshooting Procedures (Cont.)

Problem	Possible Cause	Corrective Action
System halts unexpectedly during normal operation.	The Break key was pressed inadvertently.	Power on system again. Set Halt Enable/Disable switch to the Disable position to prevent reoccurrences.
	The Halt button was pressed inadvertently.	Power on system again. Set Halt Enable/Disable switch to disable position to prevent reoccurrences.

POWER-ON MESSAGES

During the power-on sequence the MicroVAX II executes built-in diagnostic and bootstrap routines that can give you useful maintenance information. The information is displayed in the form of single letters and numbers on the LED display, located on the CPU distribution panel on the rear of the unit and on the console terminal. Normally, the display will progress from F to 0, as listed on the next page.

If the display stops in the range of F to 3, there may be a hardware error in the system. Refer to the *MicroVAX II System Technical Manual*.

If the display stops on 2, check the "system does not boot from ..." problem indications listed in Basic Troubleshooting Procedures.

If the display stops on 1, the most likely problem is that the bootstrap device does not contain bootable system software. Complete the system software installation as directed in the documentation supplied with your system software.

ROM Boot/Diagnostic Test Output Codes

Display Description

F	Waiting for DCOK assertion
E	Waiting for POK assertion
D	Running checksum test on ROM
C	Searching for RAM memory required to run ROM programs
B	Reading IPCR register (accesses Q22-Bus)
A	Testing VCB01 video console display (if present)
9	Identifying console terminal
8	Language inquiry or CPU halted
7	Running data tests on RAM memory
6	Running address tests on RAM memory
5	Running tests that use Q22-Bus map to access RAM memory
4	Running CPU instruction and register tests
3	Running interrupt tests
2	Searching for a bootstrap device
1	Loading secondary boot
0	OK

THE MAINTENANCE SYSTEM

The maintenance system software provides user tests that are designed to isolate and identify faults in the system. You can run the system test in response to an error message or to test your system periodically. Always run the system test (and record the results) before calling DIGITAL to report a problem.

The maintenance system also provides maintenance utilities. Utilities are programs that maintain diagnostic history files and error log files, format hard disks, and make backup copies of the maintenance system (RX50 diskette or TK50 tape cartridge) media.

The maintenance system software is stored on an RX50 diskette or on a TK50 magnetic tape cartridge. You run the maintenance system programs using the console terminal for command inputs and system displays.

Main Menu

The main menu lists the options available to you when you run the maintenance system. You can obtain the main menu display as directed in the Installation section of this manual, Steps 14 through 20.

MAIN MENU

- 1 - Test the system
- 2 - Show system configuration and devices
- 3 - Display the Utilities Menu
- 4 - Display the Service Menu
- 5 - Exit MicroVax Maintenance System

Type the number, then Press the RETURN key.

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Options

You can:

1. Run a test of all devices supplied by DIGITAL in the system. You can run these tests as described in the Installation section of this manual, Steps 14 through 25.
2. Display a list of all devices supplied by DIGITAL in the MicroVAX II system. A sample display is shown on the next page.
3. Display a menu of the MicroVAX Maintenance System utility programs. That option is for qualified service personnel only (see the MicroVAX II System Technical Manual).
4. Display the field service diagnostics menu. That option is for qualified service personnel only (see the MicroVAX II System Technical Manual).
5. Exit the MicroVAX Maintenance System.

SYSTEM CONFIGURATION AND DEVICES

SYSTEM CONFIGURATION

CPU type KA630-AA, 1MB FPU
Memory size 5 MB
ROM revision level V2.4 18-Apr-84
Diagnostic revision level . V1.2 20-Apr-84

DEVICES

RQDX2 RD/RX Disk Subsystem
RX50 Dual Removable Disk Drive
RD5C Fixed Disk Drive
DZQ11 . Four Line Asynchronous Multiplexer
DEQNA Ethernet Network Adapter

Type 0 and Press the RETURN key to return
to the Previous menu.

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APPENDIX A — Related Documentation

Document	Order Number
MicroVAX II System Technical Manual	AZ-FE09A-TN
MicroVAX II System Pocket Service Guide	EK-UVAX2-PS
MicroVAX II Upgrade Installation Guide	EK-630QA-IN
MicroVAX II User's Guide	EK-630QA-UG
MicroVAX II System Illustrated Parts Breakdown	EK-UVAX2-IP
MicroVAX II Field Maintenance Print Set	MP-02071-01
KA630-A CPU Module User's Guide	EK-KA630-UG
RQDX1 Controller Module User's Guide	EK-RQDX1-UG
RD52A Technical Descriptions Manual	ED-RD52A-TD

APPENDIX A — Related Documentation

Document	Order Number
<hr/>	
Microcomputer Handbook Series	
VAX Architecture Handbook	EB-19580-20
VAX Software Handbook	EB-21312-20
Microcomputer Interfaces Handbook	EB-20175-20
Microcomputers and Memories Handbook	EB-18451-20

Software Documentation

MicroVMS User's Manual V 4.0	AA-Z209B-TE
ULTRIX-32m Installation Guide	AA-CN29A-TE
VAXELN User's Guide	AA-EU38A-TE

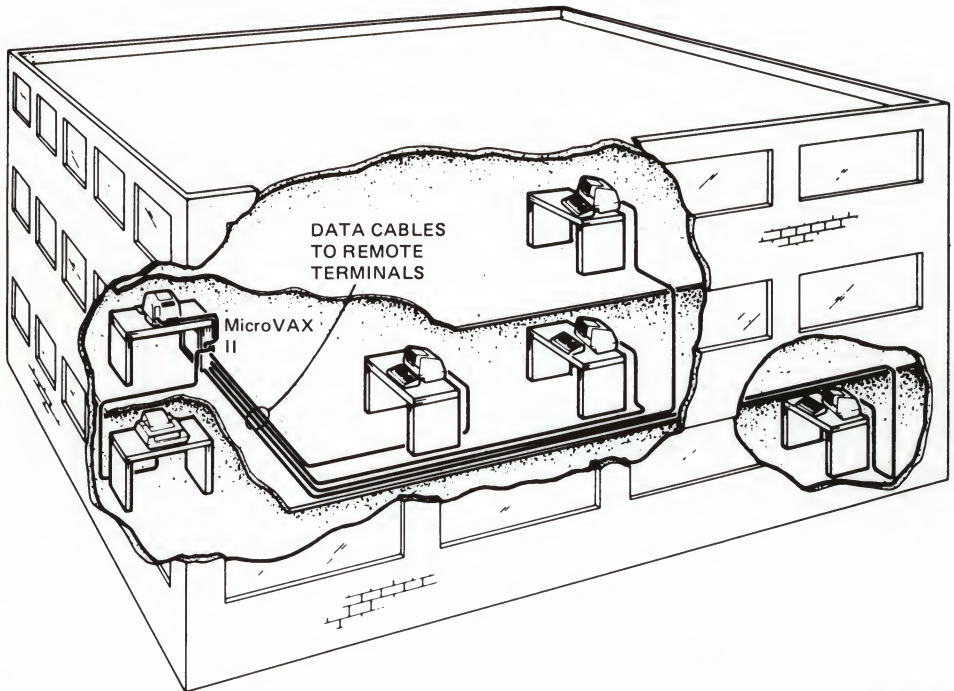
These documents can be ordered by writing to:

Digital Equipment Corporation
Accessories and Supplies Group
P.O. Box CS2008
Nashua, NH 03061

Attention: Documentation Products

Preparing for Your MicroVAX II System

The versatile configuration of MicroVAX II systems allows for multiple terminals that can be installed on more than one floor of a building or in more than one building. DIGITAL Customer Service personnel are available to help you plan your installation. Your sales representative can provide more information.



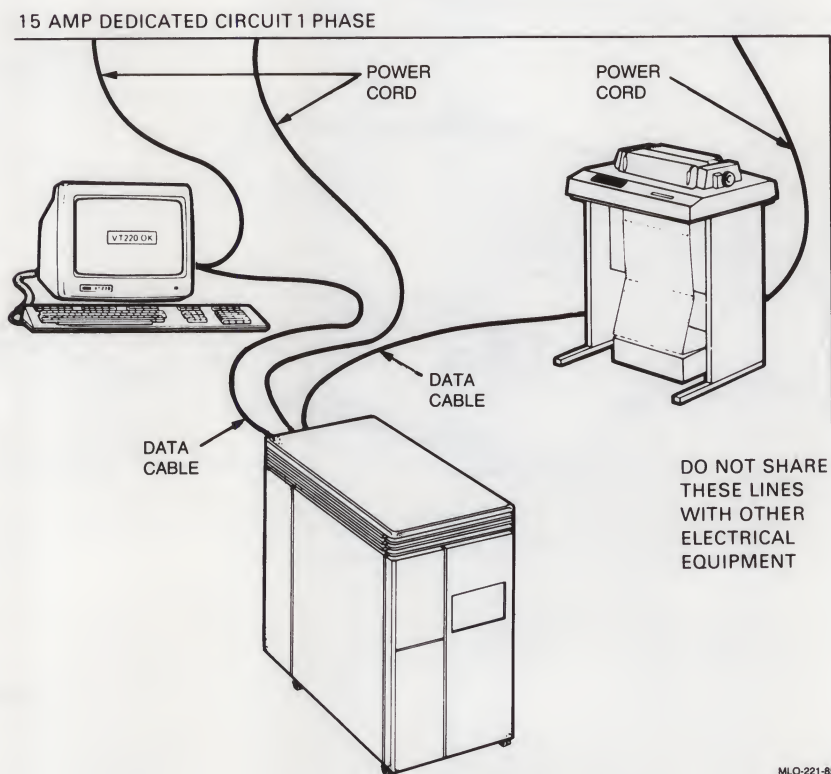
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APPENDIX B — MicroVAX II Specifications

To get the best possible performance from your system, you must provide the operating environment listed in this appendix.

NOTE

Your terminal and printer might be different from those shown.



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Operating Environment

Electrical Requirements*

Input	Specifications	
Line voltage	120 Vac	220 Vac
Voltage tolerance	88-128 V	176-256 V
Power source phasing	single	single
Frequency	60 Hz	50 Hz
Line frequency tolerance	47-63 Hz	47-63 Hz
Running current(typical)	8.8 A	4.4 A
Running current (maximum)	12.0 A	6.0 A
Power consumption (maximum)	690 W	690 W
(switchable for input voltage)		

*These depend on the line voltage setting that you select.

Environmental Requirements

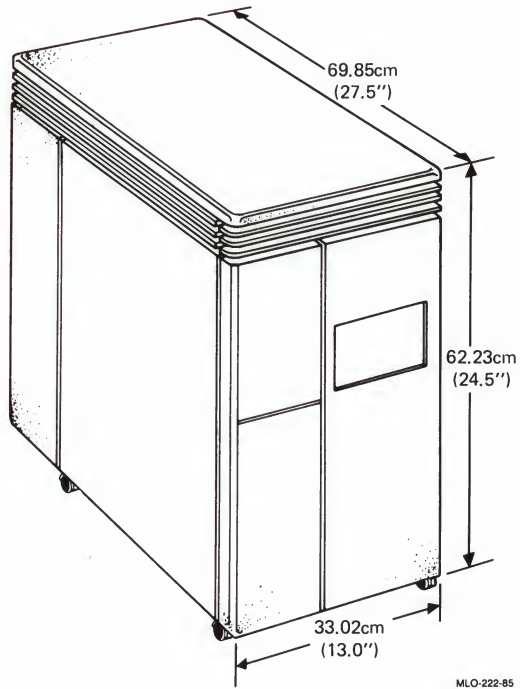
	Operating	Nonoperating
Maximum altitude	2400 m	12000 m
Temperature range*	15-32 deg.C	-40 to 60 deg.C
Temperature change rate	1 deg.C/hour	--
Relative humidity	20% to 80%	10% to 95%

*Reduce the maximum temperature specification by 1.8 deg.C for each 1000m increase in altitude.

NOTE

Your service contract may
require specific limits for
temperature and humidity.

Physical Specifications:



RX50 Dual-Diskette Drive

Functional Specifications:

Diskettes per RX50 drive - 2

Number of recording surfaces per diskette - 1

Storage capacity:

Per diskette (80 tracks)	409,600 bytes
Per track (10 sectors)	5120 bytes
Per sector (1 logical block)	512 bytes

Performance:

Average seek time	164 msec*
Average rotational latency	100 msec*
Average access time	264 msec*
Transfer rate	12.8 Kbytes/sec*

Physical Specifications:

Height	8.25 cm (3.25 in)
Width	14.6 cm (5.75 in)
Depth	21.6 cm (8.50 in)
Weight	2.8 kg (4.18 lb)

*When operating with RQDX2 controller

TK50 Magnetic Tape

Functional Specifications:

Recording media	Magnetic tape
Tape dimensions	0.5 inch wide 600 foot long
Mode of operation	Streaming
Read/Write method	Serpentine
Recording density	6667 bits per inch
Number of tracks	22

Storage capacity:

Unformatted	131.0 M bytes
Formatted	94.5 M bytes

Performance:

Tape start time	300 msec maximum
Tape speed	75 inches per sec
Streaming data rate	500 Kbits per sec
Access time (from insertion of a new tape)	1 min minimum 35 min maximum

Physical Specifications:

Height	8.25 cm (3.25 in)
Width	14.60 cm (5.75 in)
Depth	21.44 cm (8.44 in)
Weight	2.27 kg (5 lb)

RD52 Fixed Winchester Disk Drive

Storage Capacity:

Total capacity	33,554,432 bytes*
User capacity	30,965,760 bytes*
User capacity (blocks)	60,480 blocks*

Performance:

Average seek time	49.00 msec*
Average rotational latency	8.33 msec
Average access time	57.33 msec*
Transfer rate	184.32 Kbytes/sec*

Physical Specifications:

Height	8.25 cm (3.25 in)
Width	14.6 cm (5.75 in)
Depth	20.32 cm (8.00 in)
Weight	3.18 kg (7.00 lb)

*When operating with RQDX2 controller

RD53 Fixed Winchester Disk Drive

Storage capacity:

Total capacity	71,303,168 bytes*
User capacity	70,987,776 bytes*
User capacity (blocks)	138,648 blocks*

Performance:

Average seek time	30.00 msec*
Average rotational latency	8.33 msec
Average access time	38.33 msec*
Transfer rate	184.32 k bytes/sec*

Physical Specifications:

Height	8.25 cm (3.25 in)
Width	14.60 cm (5.75 in)
Depth	20.32 cm (8.00 in)
Weight	3.18 kg (7 lb)

*When operating with RQDX2 controller

Additional hardware options are available for your MicroVAX II system. Some of these options are customer-installable; others require a trained specialist.

Additional modules and components can be added to the computer if there is available space on the backplane. The capacity of the power supply might also affect the addition of options.

Terminal and Printer Options

You can use any DIGITAL video or hard-copy terminal and any LA series printer with MicroVAX II systems. The MicroVAX II system supports terminals and printers that meet EIA standard RS-232C.

The number of terminals or printers that can be connected to your system depends on the model you have.

Some systems are equipped with communication options that allow connection of additional terminals and/or printers. Refer to the MicroVAX II System Technical Manual for details.

Memory Options

Any two of the following options can be added to the MicroVAX II system.

Module Number	Capacity
MS630-AA	1 M byte
MS630-BA	2 M bytes
MS630-BB	4 M bytes

Communication Options

The following communication options are available for MicroVAX II systems.

Model	Maximum Speed	Transmission Mode	Lines	DMA
DEQNA	10 M bits/s	Ethernet	1	Yes (block mode)
DHV11	38,400 bits/s	Asynchronous	8	Yes
DZQ11	9,600 bits/s	Asynchronous	4	No

This is only a partial list of options that are available for MicroVAX II systems. For a complete and up-to-date list, contact your DIGITAL sales representative.

GLOSSARY

Application program

A program designed to meet specific user needs, such as a program that monitors a manufacturing process.

Backplane

The connector block that all the MicroVAX II printed circuit boards plug into.

A printed circuit board containing the bus.

Back up

The process of making copies of the data stored in your disk drive(s) so that you can recover that data after an accidental loss. You make these copies on RX50 diskettes or TK50 magnetic tape cartridges and then store them in a safe place.

Backup copy

A duplicate copy of data on your fixed disk that is stored on RX50 diskettes or TK50 magnetic tape cartridges.

Baud rate

The speed at which signals are transmitted serially along a communication line. One baud equals one bit per second.

Binary

A number system that uses only two digits: 0 and 1. These digits are usually represented in MicroVAX II circuitry by two voltage levels.

All MicroVAX II programs are executed in binary form.

Bit

A binary digit, the smallest unit of information in a binary system of notation, designated as a 0 or a 1.

Boot

To use a bootstrap program.

Bootable medium

A fixed disk, diskette, or magnetic tape containing software (such as an operating system) that the bootstrap program can load into the MicroVAX system memory.

Bootstrap

A program that you start when you turn the MicroVAX II on. The bootstrap loads software contained on fixed disk, diskette, or magnetic tape cartridge into memory. The MicroVAX II then stops executing the bootstrap and starts executing the software in memory. The software usually loads an operating system or other software into memory, so that the MicroVAX II can start processing.

Bug

An error in the design or implementation of hardware or software system components.

Bus

A printed circuit board that is part of the backplane. The bus permits communication among the other MicroVAX II printed circuit boards.

Byte

A group of eight binary digits (bits). A byte is one-half of the size of a MicroVAX II word and one-quarter of the size of a MicroVAX II longword.

Central processing unit (CPU)

The part of a MicroVAX II system that controls the interpretation and execution of instructions. In the MicroVAX II system all CPU functions are on one MicroVAX II CPU chip.

Command

An order given by a user to a MicroVAX II, often through a terminal keyboard.

Communication line

A cable along which electrical signals are transmitted. Devices or MicroVAX II systems connected by communication lines can share information and resources.

Computer system

A combination of MicroVAX II hardware, software, and external devices that performs specific operations or tasks.

Console terminal

The terminal that you use when installing software and running diagnostic programs.

Controller

A MicroVAX II component, usually a printed circuit board, that regulates the operation of one or more peripheral devices. Controllers are often called interface units.

Control panel

The area on the front of the MicroVAX II cabinet that contains control switches and indicator lights.

CPU

Central processing unit.

Data

A representation of facts, concepts or instructions, suitable for communication, interpretation, or processing by humans or by machines.

Data transmission

The movement of data, in the form of electrical signals, along a communication line.

Debug

To detect, locate, and correct errors (bugs) in system hardware or software.

Device

The general name for any entity connected to the MicroVAX II that is capable of receiving, storing, or transmitting data. (See Input device, Output device, Input/Output device, and Controller.)

Device name

The name by which a device or controller is identified within a MicroVAX II system. You use the device name to refer to that device when communicating with the system.

Diagnostic program

A program that detects and identifies abnormal MicroVAX II hardware operation. The MicroVAX Maintenance System software contains several diagnostic programs.

Disk

A flat circular plate with a coating on which data is stored magnetically in concentric circles (tracks). MicroVAX II disks include the RD52 or RD53 fixed disk and the RX50 diskette.

Disk drive

A device that contains a fixed disk or one or more diskettes. The drive contains mechanical components that spin the disk or diskettes and move the read/write heads that store and read information on the surface of the disk or diskettes.

Diskette

A flexible disk contained in a square paper envelope. A diskette.

Diskette drive

The device that holds one or more RX50 diskettes. (See Disk drive.)

EIA

Electronic Industries Association.

Error message

A message displayed by the MicroVAX II to indicate that it has detected an error or malfunction.

File

A collection of related information treated by the MicroVAX II as a single item.

Formatted data

Data laid out in a particular pattern to conform to a predetermined structure. The structure is dictated by the system software.

Hard-copy terminal

A terminal that displays information on paper, rather than on a screen. Compare video terminal.

Hardware

The physical components - mechanical and electrical - that make up a MicroVAX II system. Compare Software.

Head

The part of a fixed disk drive, diskette drive, or tape drive that reads, records, and erases data. Also called read/write head.

Input device

A piece of equipment used to transfer data into the MicroVAX II. A keyboard is an input device.

Input/Output (I/O) device

A piece of equipment that accepts data for transmission both to and from a MicroVAX II. A terminal is an input/output device.

Interactive

The method of communicating with a MicroVAX II system. You type a command at the keyboard, the system executes the command, and then responds with a message or prompt for another command.

Interface

A device or piece of software that lets different components of a MicroVAX II communicate with one another.

I/O

Abbreviation for input/output.

K

When referring to storage capacity of a MicroVAX II, the symbol that means a binary thousand or 2 to the 10 th power (1024 in decimal notation).

K byte

Abbreviation for kilobyte.

Kilobyte

1024 bytes.

LED

Light emitting diode. LEDs are used as indicator lights on the control panel. A segmented LED display on the CPU distribution panel insert on the rear of the MicroVAX II cabinet displays the characters 0-9 and A-F during the power-on sequence to indicate CPU status and normal/abnormal MicroVAX II operation.

Load

1. To move software, usually from a peripheral device into memory.
2. To place a disk in a disk drive, or tape in a tape drive.

Longword

A group of 32 bits, equal to two words or four bytes.

Magnetic tape

A long strip of plastic coated with magnetic oxide, used for storing data. Often called magtape. The tape contained in a TK50 magnetic tape cartridge.

M byte

Abbreviation for megabyte.

Megabyte

1,048,576 bytes.

Memory

The area where a MicroVAX II finds the instructions and data it will process.

Menu

A displayed list of options. The list usually contains commands you can enter.

Off-line

Pertaining to equipment, devices, and events that are not under direct control of the MicroVAX II system.

On-line

Pertaining to equipment, devices, and events that are in direct communication with the MicroVAX II system.

Operating system

A collection of programs that controls the overall operation of a MicroVAX II and performs such tasks as:

- Assigning places in memory to programs and data
- Processing requests, scheduling jobs
- Controlling the operation of input and output devices

Output device

A device by means of which data can be extracted from a MicroVAX II system. For example, a printer.

Peripheral device

Any device distinct from the central processing unit that provides it with additional memory storage or communication capability. Examples are disk and diskette drives, video terminals, and printers.

Power-on sequence

A series of ordered events that occurs when you supply power to a system by turning it on.

Printer

A peripheral device that provides paper copies of information stored in a MicroVAX II.

Program

The complete sequence of instructions necessary for a MicroVAX II to perform a task. See Software.

Prompt

A character or words that a MicroVAX II displays to indicate it is waiting for you to type a command.

Read-only memory (ROM)

A memory that does not allow modification of its contents. The MicroVAX II can use data in a ROM but cannot change it.

Reboot

To restart a MicroVAX II system. Pressing the Restart button on the control panel reboots the MicroVAX II system.

Record

A set of related data that a program can treat as a unit. A file consists of a number of records.

ROM

Read-only memory.

Run

1. A single continuous execution of a program.
2. To execute a program.

Software

Programs executed by a MicroVAX II system to perform a chosen or required function. Compare hardware.

Software package

A set of related programs that performs a specific task.

Storage medium

Any device capable of recording information, for example a diskette.

Store

To enter data into a storage device, such as a disk, or into memory.

System

A combination of MicroVAX II hardware and software and external devices that performs specific processing operations.

System management

Tasks performed by the operating system to control the overall operation of the MicroVAX II system.

Terminal

An input/output device generally used for communication between the user of a MicroVAX II system and the system itself. Terminals are divided into two basic categories: video and hard-copy.

Video terminal

A terminal that displays information on the screen of a cathode ray tube (CRT). Compare hard-copy terminal.

Word

A word is 16 bits long.

Write-protect

To protect a disk, diskette, or other storage medium against the addition, revision, or deletion of information.

Write-protect notch

The small notch in the side of an RX50 diskette. You can cover the notch with an adhesive-backed label or tab to write-protect the diskette.

